

ABSTRACT

A method and system for providing and magnetic element is disclosed. In one aspect, the magnetic element includes at least a pinned layer, a free layer, and a current confined layer residing between the pinned layer and the free layer. The pinned layer is ferromagnetic and has a first magnetization. The current confined layer has at least one channel in an insulating matrix. The channel(s) are conductive and extend through the current confined layer. The free layer is ferromagnetic and has a second magnetization. The pinned layer, the free layer, and the current confined layer are configured to allow the magnetization of the free layer to be switched using spin transfer. The magnetic element may also include other layers, including layers for spin valve(s), spin tunneling junction(s), dual spin valve(s), dual spin tunneling junction(s), and dual spin valve/tunnel structure(s).